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For presentation at NATO 37th AVT Panel Business Meeting, Tallin, Estonia (29 April 2016)

PA Case Number: #16179; Clearance Date: 4/8/2016

#### 14. ABSTRACT

Viewgraph/Briefing Charts

N/A

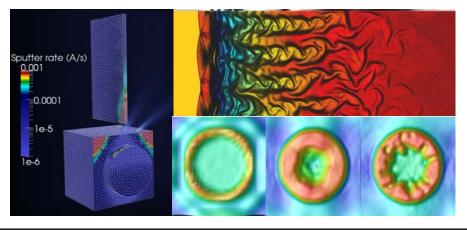
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# SCIENCE AND TECHNOLOGY ORGANIZATION COLLABORATION SUPPORT OFFICE



AVT-271 RWS on "Assessment of Capabilities for First-Principles Simulation of Spacecraft Electric Propulsion Systems and Plasma Spacecraft Environment"



Team leader(s): Justin Koo (USA)

Anne Bourdon (FRA)

Members: Giovanni Lapenta (ITA), Thierry Magin

(BEL), Manuel Torrilhon (DEU)

Partners: None

**Duration: NOV 2015 – OCT 2016** 

**Coordination:** RWS scheduled for 3<sup>rd</sup> week of June,

Neuilly, France

Related activities: Followon to AVT-ET-152

### **Objectives:**

- Continue AVT-ET-152 effort to identify critical technology for feasibility of high fidelity simulation of plasma thrusters, plasma plume-spacecraft environment interaction, and the impact of space weather on spacecraft environment
- Perform topic selection for follow-on RTG proposal to implement recommendations of RWS

#### **Topics covered:**

- Multiscale plasma simulation / consistent plasma hierarchy including transport terms
- SoA models for plasma-material interactions
- Emerging trends in computational algorithms/HW/SW

## Impact and Exploitation: (DOTMLPFI)

- Meeting Proceeding will document broad range of technical challenges to first principles simulation of partially ionized magnetized plasmas as well as potential numerical methods / experimental validation / theoretical analysis avenues to address these challenges
- Downselect actions from this broad range of possibilities will identify high-impact technological problems for more in-depth investigation
- TAP/ToR proposal package(s) for a follow on RTG(s) will be developed after RWS and presented in time for the Fall 2016 Panel Meeting